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SCHOOL AND SOCIETY

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SCHOOL AND SOCIETY

Volume III SATURDAY, JUNE 10, 1916 Number 76

AN EDUCATIONAL QUEST[1]

FORTUNATE is the man who, on an occasion of this kind, has been given a cue or text. He can then at least divide, if not evade, responsibility for the direction and, to some extent, the character of his utterances. A respected member of your committee on arrangements told me that I should be expected to speak of my dreams. There was much friendliness and perhaps just a touch of irony in this counsel.

I am sure that he did not wish to suggest that my dreams were necessarily all of the stuff of which dreams are said to be made—by others than Freud, that is. But I think he may have heard some of his coworkers regret that the Commissioner of Education had seemed at all times less interested than he ought to be in history—and that especially in a region so rich in noble historical associations as New England. Hence he may have assumed, somewhat naturally, that the Commissioner, if given a bit of reassurance, would prefer to speak of the aspirations and events that have not yet become history—may never become history, indeed, since history is commonly defined as a record of *significant* or *memorable* events.

It is true that, except as a matter of intellectual diversion, I have never been keenly interested in the past for its own sake. To me the strongest interest has always lain in the present and the prospective. I think I realize that perspective can only be obtained by including within one's field of vision that which lies behind, but if, as I conceive it, contemporary civilization is essentially dynamic and in rapid onward motion, then the rearward view must be essentially selective, must, in fact, be a deliberate searching of the vanishing horizon for the stars and the lights and the set of currents that, observed and reckoned with in our calculations, give us helpful orientations and experience for navigating the reaches of the streams that lie ahead.

To me the life of our times can best be visualized as a vast current, which, contrary to the custom of the great rivers of which we have report from geographers, seems, as it grows wider and deeper, to grow swifter also. Upon this current the various structures of our institutional life are being carried forward like gigantic rafts, each with its heavy freightage of human beings. I know of no institution of which it could be truly said that it is moored in the midst of this sweeping current. A few, perhaps, are drifting in eddies. The crews of a few others have joined forces to row back against the current and for the moment they are cheered by the thought that their combined efforts are at least holding their rafts stationary as the stream sweeps by.

But in general the current is hurrying most of our rafts, and us with them, onward. We do not yet know very well of what this current is composed. It undoubtedly represents the confluence of several unlike streams—of which the increase and diffusion of knowledge, the multiplication and migration of human beings seeking foothold on the earth, the comparative security of property in modern times, the

[1] Remarks of Commissioner David Snedden on the occasion of a complimentary dinner tendered by the schoolmen of Massachusetts, May 19, 1916.

invention of power-using machinery, the rising of standards of living and the discovery of effective means of business co-operation, are the most evident. Think what a momentum is given to the current, for example, by the simultaneous influx of pressures of increasing population and of rising standards of living—pressures which, if not permitted to expend themselves in leakage, soon generate the explosive outreachings of a Germany or Japan!

The essential facts as to the movement of the current are somewhat clearer to us. We know, too, now that man has been carried on the breast of that current—call it social evolution if you will—since his first appearance on earth, although for countless thousands of years he had not learned of its motion—a motion which was for long periods, doubtless, much slower than it has been in recent centuries.

We of the so-called occidental civilizations have learned some important things, also, about the rafts. For one thing, each one carries, not a few individuals, but great companies, and often they grow larger through processes beyond our control. For another thing, all the rafts are more or less linked together by some sort of flexible network of bonds. One—church, or business, or medicine or banking—may move faster than the others for a time, but it is soon checked if it does not run on the rocks. The crew of one—education or government or agriculture or defence—may become indifferent or reactionary, and try to restrain the forward movement of their craft; but after a few decades or centuries—only moments on the current of life—these are either jerked along or else sometimes crowded on to shoals to remain as stranded and unattractive wrecks.

Furthermore, we have learned that while we can not greatly accelerate or greatly retard the onward motion of our rafts, we possess very substantial powers of guiding their courses in currents of reef-obstructed waters. Within limits we can prevent collisions, and in some emergencies we can bring many rafts together so that they will move as a fleet. Then, too, if we help each other, we can reconstruct and even greatly enlarge our rafts as we go. We can make conditions more livable by so dividing up work that coordination of effort will result, and each type of ability will find or be helped to find the kind of service it can best render. We can elect captains and steersmen to whom we can assign the duties of keeping us off the rocks. We can even set experts at work with telescopes to study as well as may be, in the mists, the courses that lie open to us down-stream.

But in spite of our greater knowledge of currents and courses we encounter new troubles. For one thing, our rafts have become, in some cases, so gigantic that the crews can hardly steer them in dangerous rapids. For another, the big rafts are constantly crowding each other. Some are being steered recklessly; perhaps those at the helm are fools, perhaps they are drunk. Some of the old institutions have many rotten timbers. Some of the newer are not controllable as yet. Some that once carried splendid crews have lately come into the possession of persons who are chiefly roysterers—they are willing to float recklessly and to drink and amuse themselves heedlessly.

Having thus pressed home my figure, may I make some specific applications of the thought involved to those forms of institutional activity which we call education? The raft which we educators try to navigate has relatively little free way; it is much hemmed in by the rafts of family, church, government, industry and caste. As a crew we have not always been willing to recognize the speed and set of the cur-

rent, so our raft has been pushed by the other rafts, rather than steered by our crew, into the more favorable channels. In fact, we have been so much preoccupied with our detailed work aboard that the helm has often been forgotten and even now, as a crew, we attach little importance to the matter of steering, having a child-like faith that we shall be kept up with the flotilla and that somebody will always warn us off the rocks and shoals in time.

It is not that we are oblivious of our motion; most of us now hold the conviction, in fact, that we are in rapid motion and that its rate is increasing. But our raft is an unusually complicated and difficult one. We do not understand much about its machinery as yet. To a man from Mars, standing on the banks, perhaps nearly all the crews would seem to exhibit some of the characteristics of the bandar-log—who, you will remember, sit in the trees and talk at great length of what they are going to do, but who rarely do it. But I fear he would be especially struck with the talkativeness of the crew of our raft. He could not appreciate what a vast raft we have, and how much rebuilding it will require for the currents in which we now find ourselves. He could not understand, either, how little training we have had in teamwork. We have only begun to work out the system of signals that we propose to use. We have not built satisfactory steering apparatus, and of telescopes to look ahead down stream we have practically none.

Nevertheless, even though the crews on some of the other rafts are contemptuous of the amateurishness of our ways, and though the man from Mars on the bank may think us especially bandar-logish, we on the raft are certain that we are improving. We are getting better command of the work that must be done each day. If we have not yet learned much about steering, we have at least learned that there is a current, that it seems to grow broader, and more rapid, and that our raft needs competent steering.

But perhaps we have not yet learned that in this matter of steering the raft a large amount of cooperative and coordinated effort is required. Only very recently, indeed, have any of us learned much about the *science* of steering. We have long relied upon the slowly evolved *arts* of steering, which, based as they were largely upon crude experience sifted over from generation to generation, have given only imperfect guidance in time of need. But we see that some of the other raftsmen have reached the point in their own education where they are able to do many things which have a remarkable effect upon their control of their own and their neighbors' rafts. They take soundings, make surveys, test the speed of the current, and ascertain some, at least, of the qualities of the confluent waters; but especially they have reconstructed the machinery of their own rafts. They have provided in advance for repairs and renewals. They have put maps in the hands of their steering committees. More important than all, they have learned to join forces in such a way that haphazard work, duplicated performance and conflicting effort are largely reduced, if not eliminated.

It is certain that on our raft we are going to do likewise. We shall study our machinery better, take our bearings and soundings more scientifically, and learn how better to coordinate our efforts in managing and steering our craft.

So much for the play of imagination—for a kind of wakeful dreaming, if you please! May I continue in the personal vein, and show how I have tried to make practical application of some of the ideas of educational progress crystallized out of these dreams?

I. In the first place, one must develop

and use a theory as to the best methods of promoting the improvement of education. We know that improvement has often taken place when no one consciously tried to promote it. That is the method of natural evolution—the survival of the most fit device or way, a process effected by social selection of accidental or necessitated variations. Then we know that improvement has been achieved as a result of a kind of blind pushing forward on the part of those discontented with existing conditions—as one might conceive blind men exploring a forest. Persisted in long enough, this process of trial and error or success leads to some progress—unless rivers are encountered that need bridging or cliffs that require scaling ladders. Again, there is the method which can probably be accurately described as that of experimental philosophy—by which men very deliberately gather in companies, and after carefully describing the experience they have had, and the interpretations they make, document their findings as exactly as language and instruments will permit, and set forth tentative proposals for future action in truly experimental spirit. Finally, we are justified in assuming that eventually in education, as heretofore in medicine, engineering and agriculture, the methods of experimental science will be found capable of application.

It has seemed to me that most of the methods now operative in effecting educational improvement—in rendering more ship-shape and in navigating more effectively the raft of education—belong to the second class described above. They are of the trial and error order. As a consequence, progress comes wastefully, and fitfully, and the percentage of errors is always much greater than the percentage of successes. Under these conditions, too, the dogmas of *a priori* philosophical speculation have undue weight, as have also crystallized traditions and customs, because, whether true or untrue, whether practically effective for modern conditions or not, they impart a sense of assurance, of stability, of security.

Now it is probable that we shall have to wait many years before we can apply in their completeness the methods of scientific experimentation to more than a few departments of education, although the obligation is ours to use this method always to the fullest possible extent. But in the more strictly pedagogical divisions of education —as distinguished from the administrative —we have as yet very inadequate terminologies, and but few definite standards of measurement for purposes of description and comparison. Certain kinds of radical experimental work—but rather of the trial and error order, it must be admitted—the public is disposed to refuse us, as it long ago opposed radical experimental work in medicine, especially where human bodies and minds were involved as experimental subjects.

But we should soon be able to do a great deal in perfecting, for use in promoting the improvement of education, the methods that are characteristic of experimental philosophy. Under this title I include much more, of course, than what is commonly understood as empirical method.

Let me describe to you this method as I conceive it at its best. For one thing, there is involved the deliberate study by individuals, with a view to ultimate cooperative agreement, of those intellectual tools of work which we call terminologies. We educators have long been content with a terminology of vague general words and phrases, all carrying confused and variable connotations. A Canadian writer has recently described them as "omnibus general terms," and an Englishman as "woolly" words. For some years I have been urging

that we get together and agree to use certain common terms in a uniform and definite way. The currency which we now employ for the exchange of thought has no fixed values—it is a Mexican currency. If we can not do better, let us have a fiat currency as a means of exchange for educational thought, but let there be only one authorized issue, and let us refuse all other issues. At least we can then do business to some purpose.

In that experimental method, which is more philosophic than scientific, there is involved, in the second place, the notion of sustained intellectual cooperation among the few best qualified workers, in studying the results of past experience and also hypotheses as to heretofore untried ways of doing things. By this I mean, of course, committee work at its best. We have had some good work of this character, already, but I do not find that we have as yet evolved general plans whereby a high degree of efficiency can be assured for this committee work. As an accompaniment of such work we must, of course, have documentation; and, while recent surveys and other studies have produced good results in documented form, we are as yet in reality only at the beginnings of sound developments in this direction. We must also kindle the disposition and train the power to criticize constructively documental findings.

We must expect from the experimental method, too, a constant striving towards the definition and acceptance of educational principles—the provisional working statements of the verities which must be always our goals of effort. But the searchers for truth and practical efficiency under the guidance of the methods of experimental philosophy will be essentially pragmatic in their attitude both towards the material upon which they work and towards their own findings. For them all conclusions will be tentative, always subject to expected analysis, criticism, revision, and perhaps discard. They will embrace without reserve the evolutional conception of knowledge. They will know that they live in a mobile world.

The acceptance of the methods here described involves, of course, a ready disposition to examine, evaluate and, if need be, relegate to the museums of antiquities, those accumulated intellectual constructions and deposits from the past which we call traditions, dogmas, beliefs, faiths and customs. The massed materials which fill the professional books now read by educators consist largely of these deposits, supplemented by speculations about and upon them. Personally, I have always felt free to question educational tradition and custom, but, I hope, in no hasty or malevolent spirit. On the other hand, I hold that practise based upon custom may be a much sounder and safer practise than one based upon even brilliant recent speculation or hypothesis —particularly if that speculation emanate from only one mind, and that, perhaps, destructively inclined towards the traditional.

A sharp differentiation should be made, as I see it, between the cooperative, intellectual examination and criticism of the traditional, on the one hand, and the revision or displacement of the customary in practise, on the other. We should eagerly address our minds to the former task; but we should approach the second slowly and with all possible caution and forethought. Tradition in our minds can not be sacrosanct; but a heavy burden of proof rests upon those who would change current practises that, whether effective or not, have at least the approval of time.

In passing, may I say that I sometimes find it hard to make clear to my co-workers

the distinctions here insisted on. If I question a tradition, they often think I also recommend the summary abandonment of practises based on it. For example, in my own mind I question very seriously the prevailing traditions as to the educational value of such studies as algebra and Latin; and I insistently urge my professional associates to examine these traditions, to study their genesis and present significance, and to criticize the results of their long dominance. But I do not recommend the abandonment at present of these studies; the most that I would do, in view of our uncertainty, would be to give them a less "protected" and monopolistic position.

One other point, and I shall have done with discussion of the matter of method of advancing educational knowledge and skill. The agencies for this purpose must, to an increasing extent, be specialized. We shall be obliged here as elsewhere to divide ourselves into the two classes of those who increase knowledge and teach their findings, and those others who are taught and use the findings. We must, for our salvation, continue, as we have recently begun, progressively to develop specialists in educational thought, experimentation, research and propaganda. Massachusetts should have, and will yet have, at some great center in the state, a richly endowed agency, affiliated with our higher institutions of learning, and dedicated to the advancement of education as applied art and applied science. Notable beginnings of such an organization we have now; but greater endowment, and freedom to accept opportunity, are yet its outstanding needs. Perhaps in time the state may administer an agency of this sort; but, for the present, initiative, and the disposition for exploration, find best openings through private agencies, if these are given resources sufficient to accomplish their purposes.

In the meantime it seems to me that educational progress depends also, and in at least equal measure, upon those who, not so situated as to be able to do a large amount of constructive thinking and experimentation themselves, nevertheless constitute the body of experts who must first and chiefly seize upon the results of that thinking and give them practical application. Almost every man to-day is in one capacity a leader or director of others; and in another capacity he is a follower or servant. Pioneers in thought and discovery must have their willing and supporting followers if they are to succeed. To each one of us is given at times to be the effective follower of constructive leadership in education—a doer of the deeds planned by those specialists who have time and opportunity to plan them as we have not.

II. I have indicated at length my ideal and theory as regards methods of promoting improvement in education. Continuing the personal note, I wish to discuss the theory of educational purposes which I have strongly urged in recent years.

By educational purposes I mean the valuable ends for the individual and for the society of which he is a part, that we wish to realize through education. We expect each and every form of education to have value, worth or good for the individual educated or for his fellows. No one of us would dare defend any kind of education that he did not believe, or pretend to believe, would produce good results.

Now the worths of certain well-defined types of professional education are so clearly manifest as to receive general acceptance without argument. The same is true of those forms of skill, such as reading, writing and ciphering, which we teach in our lower schools. But for the rest the case is by no means so clear. For where our purposes are very clearly and specifically

defined—as when we so teach Latin, algebra, ancient history, freehand drawing and physics that our learners may pass specified examinations in these subjects—we are far from having ascertained why, when and to what extent these particular disciplines are worth while, or most worth while, for the particular groups of pupils whom we teach. On the other hand, where we define our purposes in terms of vague and often unanalyzed generalizations—such as culture, sharpened senses, capacity for self-realization, the trained mind, obedience, intellectual rectitude, and the like—we are dealing in more or less mythical abstractions which have no inherent or necessary or demonstrable connection with the means and methods we actually employ in the schools.

Hence to the maximum of our abilities we must insist on the discovery and definition of educational goals of demonstrable worth, and on such readjustment of our educational machinery as will enable us quite certainly to realize these ends. In words that have already become classic, Dr. Abraham Flexner has sketched a tentative curriculum for a modern school based on the principle that it should include nothing for which an affirmative case can not now be made out—affirmative, that is, as meeting in a demonstrable way the cultural, civic and vocational needs of young people living, and preparing further to live, in twentieth-century American civilization.

Now I am prepared to grant the very great difficulty of giving workable expression to Dr. Flexner's plan as regards liberal or general education in school and college at the present time; but, recalling what I said above about the unlike attitudes to be taken, on the one hand towards experimental study of educational problems, and on the other towards modifying generally established practise, I would urge that it is now in the highest degree incumbent upon us all to examine, analyze, criticize, evaluate and reconstruct the prevailing traditions, assumptions and dogmas regarding the worths or values of particular studies and curricula, as well as means and methods of teaching them. And at every step in this process let us not be afraid to consider the division and subdivision and classification of educational purposes into very definite and demonstrable species and even varieties. In this process we may appear at times to do violence to the higher unities and obscurer syntheses of the mental and spiritual life; but I think there is no evidence that we are likely to do so to a serious extent. On the other hand, I see no other course that will lead us out of the fogs of mysticism which now obscure all our educational roads. We need to escape these fogs of mysticism, for one reason, because it is under them that at present so many quackeries and humbugs take root.

So I hold that we must define our purposes, first on the basis of the known needs and possibilities of the individual; second, on the basis of the demonstrable needs of society. We must, for this purpose, draw heavily upon all the known facts and tested principles of psychology and sociology. We must proceed to assemble categories and schemes of valid educational purposes, the values of which can be tested by available standards of human judgment as to things worth while. Eventually it will, as a consequence, be easy enough to find the means and methods of realizing these values.

III. The large problems of contemporary education include, in addition to those of method and objective already discussed, a third, relative to administrative organization and procedure. For several years I have been interested in trying to discover what, under prevailing conditions of popular or democratic control of public educa-

tion, would prove to be the soundest principles upon which to base the machinery and methods of administration. No one doubts but that such machinery must become increasingly complicated, and that the efficiency of the schools of any community or period will be greatly affected for better or worse by the effectiveness of the organization which establishes and administers them. These are simple verities in the minds of any persons who have had responsibilities even in such concrete and simple matters as building a schoolhouse, employing a superintendent of schools, adopting a new text-book, introducing a new subject into the course of study, or providing for some definite professional training for teachers already employed. With increasing knowledge we shall learn that there is no phase of education as to which right organization is not as urgently needed as it is in defence, business or manufacture.

There are now involved, practically or theoretically, at least five distinct types of agencies in educational administration—namely, local lay authorities, local specialist authorities, central lay authorities, central specialist authorities, and advisory committees. The first four of these, organized more or less definitely, are essential in all modern school administration; while many of us are coming to believe that the development of the fifth, in organized and responsible form as an alternative to the present irresponsible and ineffective criticism by parents, teachers, citizens and others vitally interested in the conduct of the schools, is a necessity of the near future.

During the last decade substantial progress has been made in defining that distribution of functions and responsibilities between lay and specialist official which will promote maximum efficiency. Prevailing practise in these matters may be somewhat behind our accepted theory, but in city school systems, in the government of higher institutions of learning, and elsewhere we find a constantly increasing disposition to insist that, while in the case of the exercise of each and every administrative function, both lay official and employed specialist have responsibilities, these responsibilities are qualitatively and quantitatively different from, or rather complementary to, each other.

But when we come to the matter of differentiation of administrative functions between central and local authorities, we find that we have as yet no satisfactory analysis of principles, and of course our practise as based on legislation in all states of the union is as yet most chaotic and primitive. The tendency has been, on the whole, to have a specific function exercised exclusively either by the central, or else by the local authority; but from my point of view this tendency is as unfortunate as was once the tendency to have specific functions exercised exclusively by the lay, or else by the specialist, authority.

I hold instead that just as experience and scientific analysis have enabled us to establish a proper differentiation of complementary responsibilities between lay and specialist officials, so we shall yet learn that also, as regards the exercise of all larger functions, complementary responsibilities can be defined as between central and local authorities.

We often hear mention made of the desirability of "home rule" in education; and it is certainly true that in the exercise of so intimate and vital a public function as education, the local community should have large powers of initiative and direction. On the other hand, no community should or can, in the last analysis, live unto itself alone; hence the contention for "home rule" in the absolute sense is, or ought to

be, an absurdity. The commonwealth as a whole is vitally concerned in the success or failure of every local attempt at school administration, and it can extend its confidence in, and approval of, home rule only so far as such rule insures that conduct of education that will promote the well-being of the commonwealth and its members.

Equally, we often hear urged the virtues of so-called centralization. The advocates of the withdrawal of administrative functions from local authorities forget that public education represents a form of collective enterprise which is peculiarly dependent upon local good will, local sympathy and local disposition to make sacrifices. At times it may also be dependent, for certain specific kinds of adaptedness, or efficiency, upon local intelligence as well.

I feel sure that we shall yet find it possible to define certain principles on the basis of which the respective interests of central and local agencies in educational administration can be determined, and in consideration of which local and central responsibilities can best be apportioned for the sake of maximum efficiency. We are now only groping in the dark in this matter, and naturally we are suspicious, when not condemnatory, of each other. It is not practicable here to discuss this subject in detail, but it must be apparent to every careful thinker that in such important functions as testing the qualifications of teachers, providing plans for school buildings, taking educational inventories and making educational balance sheets, revising courses of instruction, selecting books and equipment, supervising instruction, and many others, responsibilities for the specific functions of initiative, exercise, approval, supervision and evaluation can best lie in some clearly defined cases with central authorities, and in other cases with local authorities, but that always and in each case there should be a division into what are organically complementary functions.

Many tendencies towards such a differentiation are now manifest in educational administration; but as a rule they are haphazard, accidental and uncoordinated. They are the spontaneous variations of primitive stages of evolution, not the products of scientific thinking. We need still more light on basic principles throughout this field.

In this connection, too, emphasis should be laid on the probable advisability of developing so-called advisory or consultative agencies wherever administration becomes highly organized, technical and efficient. Only so can the needs, aspirations and susceptibilities of individuals and of small groups be given due consideration. Our city school systems need, as an offset to their technical and impersonal organization, consultative committees representing parents, teachers, perhaps even pupils. These committees can be endowed only with responsibilities for suggestion and counsel; they can have no direct administrative authority. Where citizens find it necessary to enforce their will they must act through the regularly established channels of the ballot and election.

I have admitted my disposition, at times, to dream of the future. I wish I were gifted enough to frame some accurate prophecies regarding the educational development of Massachusetts during the next decade. At least I should like to prophesy these developments:

1. That the people of the state will continue to exhibit the strong and broad interest in all that pertains to public and private education which they have shown in the past, and that, as a necessary means to the realization of the educational ends they believe in, they will promote the

development of even more effective means of administering and supporting such education than now obtain;

2. That the general court, voicing the aspirations of the people, will increasingly make possible among its own members and committees the full consideration, with the aid of experts, of those numerous questions of policy and practise upon the right determination of which, so much of the educational well-being of the state depends;
3. That local school authorities, who will always be charged with very large responsibilities for the administration of public schools, will put progressively fewer obstacles in the way of the development of those central agencies without which certain necessary means of education can never become more than partially efficient;
4. That central agencies, however great their responsibilities and however apparently urgent the need of decisive and summary action at times will not tend to overlook the importance of preserving and fostering all those local interests, sympathies and understandings without which school systems must become mechanical and undemocratic;
5. That those educators who have, combined with the scientific disposition, the opportunity to do constructive thinking and research in education will increasingly work towards the solution of the actual problems that demonstrably lie ahead in the improvement of education and of the technical knowledge upon which its processes must be based;
6. That there will continue to grow a persistent demand for the analysis and revision of all that which is chiefly traditional or customary in education, and that the public as well as educators will insist that the theory of education be made less and less dependent upon *a priori* dogma and mystical generalization;
7. That educational administrators in making themselves more efficient will give increasing support to scientific and technically sound work wherever done, and will stand ready to use the results of such work in the fullest cooperative spirit;
8. That the purposes or objectives of education will be more clearly defined and evaluated in terms of the demonstrable social and individual needs of the time;
9. That teachers will move steadily toward the development of a serious and serviceable professional consciousness, which will so react as to induce them persistently to work toward the improvement of the means and methods of their own work;
10. And finally, that it will prove increasingly possible for the self-conscious and self-determining citizenship of the commonwealth to use education as a vast social machinery for achieving many of those reconstructions and ameliorations in society which scientific foresight concludes to be desirable and feasible.

In conclusion, may I express a word of personal appreciation? Six and one half years ago I began work as commissioner under the recently reorganized board of education. These years have been for me rich in experience and at no time have I lacked opportunities to do constructive work to the utmost of my powers. To the members of the board of education, to educators doing administrative work throughout the state, to the men and women who have become my co-workers on the staff of the board, to the press of the commonwealth, and to all those citizens who comprehend education in its larger aspects, I owe an especial debt of gratitude for the sympathetic

and stimulating cooperation which they have always given freely. They have placed no impediments in my way, and they have withheld adverse criticism often when it was probably deserved. Excepting only the post which has been offered me in Columbia University, I know of no work or place which I would prefer to the work and place of commissioner of education in Massachusetts. I say this, knowing perhaps better than any one else that the authority and functions of the board of education as regards the larger developments of education in Massachusetts in the near future are still ill-defined and indeterminate. I say it, knowing, too, that the general court of the commonwealth, owing to its preoccupations with matters that seem more urgent and momentous, finds it difficult to give to public education that degree of attention which, in my opinion, is due to the largest single enterprise which through state and local government the people support and conduct, and which, in spite of the fact that from one fifth to one third of all public revenues are now expended on it, is yet sadly in need of revision and improvement at a thousand points. And finally, I say it, knowing that the changing conditions of the social, economic and political life of Massachusetts may conceivably render it increasingly difficult to develop that widespread interest, and to effect that diffusion of tested knowledge, which are indispensable to the improvement of an enterprise managed in so democratic a fashion as is public education.

For after all, reverting to my first imaginings, we know that the current of life is to continue to flow on; that the institutions which make us and which in turn are remade by us will continue to be carried forward on that current; and that there will always be better and more satisfying work to do in proportion as the current grows deeper and more forceful, the responsibilities enlarge, the light in which to work grows clearer, the spirit and means of team play become more potent, and the foreseen consequences of each individual's service assume greater moment. Much as I look forward with anticipation to my new work, I can hardly repress some feelings of envy towards my successor as I relinquish to him my responsibilities. That he will receive, as he certainly merits, the same hearty confidence and support that you have given me is no small source of personal gratification to me on this occasion.

DAVID SNEDDEN

THE PART-TIME SCHOOL[1]

A CONTINUATION school is a school which young people attend for a part of the time each week, most of their time being spent in business, shop, or on the farm. All schools which give persons in apprenticeship, or in employment of any kind, the general civic and vocational training which forms the necessary supplement to the workshop, business, or farm practise are continuation schools.

The part-time or continuation schools of Germany, Austria and Switzerland were not founded as the result of any theoretical consideration of their special advantages as schools to train for practical life, but as makeshifts for supposedly better methods of training. Such makeshifts seemed necessary to enable the less favored classes financially to get any vocational training when the educational system of the guilds began to decay, on account of the advent of the factory system of production. Some training for practical life was considered

[1] An address delivered before the second National Conference on Universities and Public Service held under the auspices of the Society for the Promotion of Training for Public Service, Aug., 1915.

necessary, and part-time instruction was regarded as better than none.

Further, the continuation schools of Germany were not originally vocational schools at all, but schools for supplementary, general and moral or religious instruction for adolescents. They appeared first in the closing years of the seventeenth century, but were not important until the beginning of the nineteenth century, when Bavaria and other countries of Germany enacted legislation providing for their financial support and making them in a sense compulsory.

The instruction given, however, was meager, the number of hours few, and the time Sundays and evenings, when the boys and girls were tired. They were held in the school buildings and lacked equipment; the teachers were not specially fitted for this work.

With the advent of the factory system of production in the early years of the last century and the breaking down of the system of apprenticeship of the guilds a demand arose for some vocational training for adolescents employed in the commoner forms of industrial and commercial life. This was met by the introduction of vocational instruction into the continuation schools, but still without suitable buildings or equipment, or specially trained teachers. The course of study was limited usually to drawing, the applications of mathematics and the other academic branches to vocational life, and the usual moral or religious instruction.

After the founding of the present German Empire the introduction of manhood suffrage in imperial questions forced the consideration of some means of training the voter in civics. Again the government turned to the continuation schools, and instruction in civics became a part of the course of instruction given in them. These three lines of influence, economic, moral or religious and civic, are marked in the modern German continuation school. H. A. Clay, an Englishman, says that no one of these three influences has ceased to operate, although the relative importance of each has not been settled the same way in any two countries of Germany. Nowhere are they mere trade schools to train mechanics, but everywhere they train the man and the citizen.

Finally, the increasing appreciation of the value of these schools has led to compulsory attendance, special buildings and equipment, week-day instruction in the day time, an increase in the number of hours of school attendance, the employment of specially trained full-time teachers, whose interests lie along the lines of this special problem, and special boards of management for these schools, composed of practical men and women who understand and are interested in the problem to be solved and who will not permit them to be neglected on account of academic prejudice. This evolution of the continuation school has been the same in all parts of Europe, both in Germany and elsewhere, and it is still in progress, some states being further advanced than others.

It will be seen that these schools were evolved from the earlier forms of schools in accordance with popular needs, and not on account of any preconceived notion of their fitness for this work, based upon any well-thought-out pedagogical theory. They have, however, developed a theory of education eminently fitted for their purpose, based upon first-hand experience of the needs of the youth to be served and the demands of industry and commerce. This theory, as is the case with almost all theories that work, was a result of first-hand experience, and was an attempt to

analyze, organize, supplement and interpret that experience.

The training given in these schools begins with the analysis of the worker's experience in actual work—the only possible foundation for this training—and shows the relation of the technical and cultural elements in it to each other. It then shows how these elements should be organized and made to reenforce each other for the successful progress of *the work* and the development of *the worker*. Then this organized knowledge must be supplemented from the wider experience of the teacher and of other workers. Finally, the whole process must be so interpreted to the young worker that he will understand his work and come into vital connection with it—that he will realize that the work in itself is worth doing well, and that the better it is done, the more doors it will open to work that is still more worth doing. He will do his best, secure in the feeling that this best will lead eventually on to better. As a result of this state of mind, he will have a vital interest in his work, realizing that he is not fixed to his particular job for life, but can push on to one that is still more fruitful, as fast and as far as his ability and energy will let him. This sort of efficiency in work will develop social and civic efficiency; and the result will be the salvation of thousands whose lives are now stunted or wasted for lack of this special form of care.

In this country the plan usually followed in vocational instruction, both of university and of high-school grade, is radically different in theory and practise. In these courses the attempt is usually made to treat scientifically in the classroom the various industrial, commercial or agricultural subjects, and to supply the connection with practical life by practise in a shop or laboratory supervised by more or less practically trained teachers. The shop or laboratory is designed to illustrate the theory expounded in the classroom, and its practise may have little or no connection with that of real vocational life. Its purpose is served if it adequately illustrates the theory taught.

This last theory may be illustrated by an incident occurring recently in a great university town: A professor called upon an insurance man in order to secure blanks, statistics and other data concerning insurance. He stated that he expected to give a course in insurance during the coming semester, and that he was preparing material for it. He admitted that he had never had any practical experience in the insurance business, that he knew little of the various kinds and plans of insurance, and that it would be quite a job to get ready for the course. He believed, however, that with a sound theoretical basis, he could give a profitable course. He probably presented a logical, highly cultural development of the subject, interesting to uninitiated undergraduates, but probably not as useful to the practical insurance man as it might have been.

It is fondly believed that when the transition to real vocational life occurs the youth so trained will soon settle down to the real work of his life and more than make up the time he has seemed to lose in preparation. It is a commonplace saying that the school-trained youth has to "get the corners knocked off," before he accomplishes anything in practical life, but it is claimed that this seeming loss is soon made up and that in ten years he will be far ahead of the youth who has taken the more direct route through mere practise and experience. However true this may be of the highly trained college man who has considerable power of abstraction and analysis it is not either sound theory or prac-

tise for the seventy-five per cent. who are entering vocational life with little interest in theory and little power of analysis, who have left the elementary school in the fifth or sixth grade. *They must adopt the continuation-school plan and let the theory follow, to illuminate and rationalize the practise.* It is wasteful and worse to place these youth in classrooms devoted to speculative theory. After the full period of general education is over, they must be put immediately in touch with real productive life. Only in this way can they be interested, only in this way can they be trained, only in this way can they be educated. The part-time school in some of its forms is the best plan of preparation for vocational life.

Even when we come to consider the right training for captains of industry, it may be of interest to recall Germany's experience in training engineers. They have technical universities as we have, and middle and lower engineering schools for youth who have been in the machine trades and whose experience there is the basis of the short course in the engineering school. Director Peters, of the Association of German Engineers, stated a few years ago that, while there was a surfeit of engineers turned out by the technical universities, engineers of a lower grade, who were fitted for the positions of machine constructors, technical engineers, mechanical engineers, chemists, superintendents of departments, building experts, and so forth, were in great demand. *He stated that of 3,281 engineers employed in 105 of the most prominent industrial firms only 1,124 (or 34 per cent.) were from technical universities, while 2,137 (or 64 per cent.) were from secondary technical schools (continuation schools). The Minister of Commerce and Industry in a recent report has stated that, while Germany is well supplied with engineers of the kind turned out by the technical universities, she could use ten times as many of the grade turned out by the secondary technical schools. It is also of interest to know that the technical universities are now requiring actual experience in industrial life before graduation. This indicates the absolute necessity of basing the technical theory on actual technical experience and not on school-shop experience, illustrating a priori technical theory.*

In my experience I have found few school men who regarded the continuation scheme as of any cultural value, or as anything but a makeshift—a purely practical scheme, to be carried on only when everything else is impossible, in the form of evening schools, and only until a good technical high school can be erected and equipped. Some school men in the west object to the establishment of well-equipped, permanent continuation schools on the ground that they will interfere with the development of the technical or other high schools. They point to the phenomenal growth of the American high school and talk confidently of the day when every American youth will attend one. The permanent, part-time, practical, vocational school encroaches on their preserves and, in Illinois at least, is fought by the schoolmen to a finish. They profess to see little or no cultural value in its method of harnessing up theory and practise, and believe the school shop or laboratory to be more than an equivalent to the real shop or counting-room as an educational agency.

It is hardly necessary to state that there is no immediate prospect of all American youth attending a high school and getting their vocational training there. A very large percentage of our youth have little interest in the work done in them, and can not or will not go. If they are to be trained for practical life it will be in some

other form of school. To refuse them this other form of instruction because it may interfere with the financial or other support of the present high schools is to continue our present caste system of education, which sacrifices the active-minded boy (and girl), and the boy without means, to the boys who least need public assistance.

Further, this ignores the whole great question of the relative merits of the two systems of practical education, although such school systems as the one started in Cincinnati through Dean Sneider seem to be based squarely upon the fundamental principle of the continuation school, the principle that theoretical instruction given to the students should be employed to illuminate, supplement and interpret real shop or other practical experience.

In this and other countries the local and general governments have gone into business on a large scale, and are likely to extend their field of activity year by year. The time has come for the specialist, both in private and in public service, who must be trained for his work. The universities can do much for those higher up, but thousands must look elsewhere for assistance. *For them the part-time school is a necessity, if they are to be trained at all, and if the public is to be properly served. These schools will make it possible for people in kindred sorts of work in private life to prepare for government service, and will enable those in government service to prepare for positions higher up.* Our government employs servants of every grade, from the cabinet minister to the common laborer, and should provide for efficient service in all situations, by providing educational facilities for all.

This is not the conception of the university man. I once heard the dean of a great college of engineering in the middle west outline a different scheme: that it was the duty of the universities to train leaders so that the work would be so analyzed and organized that little or no skill would be required except at the very top. I believe this is false in theory and impossible in practise. The most practical people in the world to-day, the Germans, believe it is necessary to train everyone from the professor to the chimney-sweep. This all-round and universal training is fair and democratic, permits advancement all along the line, and is in accordance with American traditions, which demand equal opportunities for all to advance as far as their ability, energy and character will permit.

EDWIN G. COOLEY

CHICAGO, ILL.

THE PART-TIME SCHOOLS AND THE PUBLIC SERVICE[1]

ASKED what part the continuation school can take in training the people in the public service, I have to answer, Any part that is desired.

It is the function of the continuation school to train any and every person in any worth while occupation whatsoever in which he is engaged, and by that training to make him a more competent, appreciative and happy worker.

The importance and the value of these schools is little comprehended.

In theory and in public policy, at least in the northern and western states, it is held that the state, *in loco parentis*, must give to every child an elementary training and to that end must keep him in school until the sixteenth year, or the completion of the elementary-school course.

Yielding, however, to the law of exceptions, more than half of all our children are given working permits at fourteen, hav-

[1] An address delivered before the second National Conference on Universities and Public Service, held under the auspices of the Society for the Promotion of Training for Public Service, Aug., 1915.

ing finished only the sixth grade in the public schools or the equivalent, and sometimes with a decidedly less educational qualification, as in Pennsylvania, where, until January 1, it is only required that a child be able to read and write intelligently.[2]

There are some two million children out of school forever, fourteen and fifteen years of age, with an education that stops all the way from reading and writing in a poorer fashion up to the sixth grade.

Substantially all who enter the manual occupations are of this class and the total number so leaving the public and private schools is decidedly more than one half of all the native-born.

When therefore there is added to this majority of our native-born people a flood of uneducated immigrants, we see that we are in a somewhat critical situation; we are half slave and half free, half educated and half uneducated. And yet we depend upon the intelligence of the people for whatever comes to us of good or ill.

We must make the most of part-time training. It is inherent in human nature that at adolescence concrete- or hand-minded children shall go to work, shall do things and not merely learn about things.

Adolescence is far more than a problem of sex, for at adolescence the child enters upon maturity. The creative faculties and the will assert themselves, just as at the appointed time the butterfly leaves the chrysalis, or the flower bursts from the bud.

It must also be noted that there are two kinds of education: first the academic, which opens the mind and trains all the faculties. This is the work of the regular public schools and it is the first essential in educational development.

But there is another school, the school of life, of the day's work. Here we have education in action, in work.

In the first school, the regular academic, are one fifth of the population, children and youth; the receptive and dependent, giving nothing, doing nothing for the world of to-day, simply preparing to carry the burdens of the next generation.

In the school of the day's work are all the burden-bearers of to-day, upon whom rests all there is of hope or promise, all of good or ill in the world that is, and that is to be passed on to those who follow.

The educationally more advanced nations of the world, being all those of northern Europe except England and Russia, have realized for generations that it is as important to train a child in his occupation as to give him the preliminary and general academic training which we give. Never is a child trained in an occupation that he may stay where first placed; rather is he trained in a chosen occupation simply that he may have a safe beginning, a sure footing, and that he may grow in and through the chosen occupation onward and upward as far as the developing faculties and will can carry him.

It is objected that no amount of training worth while can be given in from four to eight hours per week. The opposite is the fact. A surprising amount of instruction is given in all properly developed part-time schools in these few hours per week because the training is correlated with the work of the other five and one half days and is a part thereof. This makes the whole week of work and of school one great continuous schooling. No employer but knows that if he or some one still more capable could spend one half day a week with each employee, the employee would be tremen-

[2] Under the new law children must have the equivalent of the sixth grade and must leave employment during working hours for attendance upon a continuation school not less than eight hours per week. In some respects this is the most advanced legislation in the country on this subject.

dously benefited and advanced in earning capacity and in service.

I speak of this part-time training for children because it is desirable to get the whole conception of the part-time school, if we are to measure the value it may have for adult workers, including those who are in public service. No school is right unless its students are worth more to their employers during the hours they are at work because of the school than they would be were they to work all the time with no schooling. Too many of us stop growing. Michael Angelo was in the eighties when he was questioned on his way to school and said, "I am not too old to learn."

There is no department of the public service for which instruction can not readily be provided, and the employees taught the latest and best in theory and accomplishment.

There are schools in this country where boys of fourteen and fifteen are given the average wage for such boys in employment and are given the same wage for alternate weeks spent in school. This would seem to indicate a purely philanthropic spirit on the part of the employer, but the boys earn in the week of work all that is paid them for the week in school and the week at work. Adult workers are advancing in similar fashion.

In many branches of the public service the workers are personally competent, but not experienced in the work in hand. For this reason they would rapidly improve in *esprit* and efficiency in the part-time instruction.

We Americans are prone to measure accomplishment by money expended. It is delightful to find a place where intelligence counts for more than money. The continuation or part-time schools are surprisingly inexpensive.

There is a class of 450 superior mechanics in Milwaukee who are studying evenings in the continuation school under two instructors at $2,000 each, and two assistants. These instructors are graduates of technical colleges; they have had years of experience in the machine trades as workers and as managers.

They are fitting splendid men for the positions of foremen and superintendents. It is found that these students had been part of the two thousand mechanics in Milwaukee who have been sending to a single correspondence school from $80,000 to $100,000 of their hard-earned wages annually. The profits of a correspondence school come from those who fail to finish the course, about two thirds dropping out about one third the way. The Milwaukee pupils get two nights of personal instruction weekly with ample material for two other nights of hard work at home, and 85 per cent. of those who begin finish the course. Similarly courses in Spanish and foreign trade for South America have been developed with as great ease as any course could be, and with as great success as could be desired. Also day classes with wages continued for young druggists. The list is long of the occupations taught. Twenty are taught in Milwaukee besides those of the home. The cost of the training in these classes per pupil year, although the instruction is thoroughly superior, can not be much over ten or fifteen dollars for instruction, rentals and all. The money thus expended gives a manifold return yearly through life.

There is no reason for delay or hesitation in beginning classes with a view to including all who are in the public service.

There is no other way of training the great body of the workers who are over fourteen than by the continuation or part-time school; no way of making life a continuous educational process with the science and the

discoveries of the passing days made a part of the life and working forces of these same days.

Without the continuation school education will always be a generation behind accomplishment for we will always be training children who have nothing to do with the work of the present and ignoring the real achievers.

There is no reason for delay. No one can realize the ease with which the right sort of classes can be opened. The teachers must be taken from the occupations. Experience indicates that in every occupation there are many superior men, some with previous training as teachers, who will readily undertake to conduct classes. Measured by the standard of perfection, these men fall short, sometimes very short. Measured by the value to the students of the instruction they impart, their work is of great value, sometimes astonishingly so. There need be no fear that teachers so chosen will average below those in the public schools.

The fact that the pupils hunger for the instruction given and that they are continuously occupied upon the subjects taught when out of school carries them rapidly forward.

At a cost of from $8.00 to $20.00 per student year, classes can be established in all departments of city administration from street cleaning to accounting, health inspection, police, and the higher forms of administration. No building fund is needed, but only moderate rentals in office and loft buildings, similar to those in which the work taught is done.

About 100 great corporations in the United States are giving from two to four hours of instruction weekly to employees. The companies bear the entire expense and continue the wages of the employees while in school. The schools are expected to pay in the increased efficiency of the employees, and in the many schools with which I am familiar they do pay and in one or two, a handsome profit.

The changes wrought in the spiritual and civic interests of continuation school workers is more than interesting. The joy of life is largely in achievement and continuing development. Proprietors and directors of large undertakings are going to school, so to speak, all of the time. Each day brings to them new inspirations and knowledge. Competition keeps them guessing, keeps them studying and growing.

The average worker has no fair chance to grow. The part-time school gives him this chance. Work is no longer drudgery when instruction makes it progressive. The enthusiasms that give zest to the work of management are developed in those in the lesser positions.

Part-time schools of this sort have been in operation in thirty cities in Wisconsin for three years. There are no essential differences of opinion. The school people found it easy to gather in every working child under sixteen years, and the new law raising the age of attendance on continuation school to seventeen is being happily complied with.

Children who formerly idled upon the streets are now in these schools. Even the wayward children when persuaded to enroll in these schools "almost invariably cease their waywardness," says the judge of a municipal court, "and are greatly benefited."

Young ambitious workers fill the schools evenings to learn the next better job. Older men, sometimes almost discouraged, come to learn some new trade or process in lieu of the old trade that is passing away. "The school is a veritable life-saver."

May every city hasten to establish classes for its own employees, as an example to its

community, to all other employees and workers.

H. E. MILES,
President of the Wisconsin State Board of Industrial Education
RACINE, WIS.

TEACHING SCIENTIFIC METHOD VERSUS TEACHING THE FACTS OF SCIENCE[1]

I HAVE been asked to discuss the question of the relative importance of method and subject matter in science teaching, particularly with reference to secondary school teaching, a qualification which makes the treatment of the subject a rather delicate matter for a person not actually engaged in secondary school work, but one which nevertheless has not deterred me from undertaking what may prove to be a vain task. At the same time, there is something to be said in favor of hearing a college teacher's ideas on the subject, because he is in a position to pass judgment on secondary educational methods in so far as the results of these methods are brought to his attention in dealing with college freshmen. Therefore since the college serves to a certain extent at least as the testing ground for the secondary school, any criticism reflecting on the quality of the preliminary training of its students which the college may make must be squarely met by the secondary school; and whatever I may have to offer in the way of critical suggestion looking toward an improvement in secondary-school training will, I trust, be received in a spirit of equanimity. An open and frank expression of opinion from all parties concerned is an essential step in arriving at the solution of any unsatisfactory situation.

[1] An address given before the science section of the 12th Annual Conference of the Secondary School Principals and Teachers of the Schools affiliated with the University of Cincinnati, Feb. 19, 1916.

The subject, however, is no new one; and since it has been discussed from various angles so often before it would seem that its possibilities as a topic for further discussion had been exhausted. Happily for me I can disclaim all responsibility in this phase of the matter; and owing to the fact that your program committee has seen fit to invite me to speak on the subject, I can proceed with a clear conscience, but with a deep feeling of conviction that I have nothing original to contribute to the question and that my opinion in the matter, which is based on nearly ten years experience in dealing with the problem from the college point of view, differs in no essentials from those of many college teachers who have preceded me in the past and, I suppose, of many who will follow in the future.

The finished product of the secondary school furnishes the college with its raw material; and that this material is raw in more senses than one seems to be the general opinion of those who each year are confronted with the task of remodeling several hundred high-school boys and girls into college men and women. It would, of course, be strange indeed if college teachers were to exhibit anything but an extremely critical attitude toward the student material offered them; but I am sure that secondary school teachers also must realize that their finished product is far from flawless. They too must be cognizant of the fact that high-school graduates are often defective in spelling, grammar and rhetoric; that simple problems in arithmetic are frequently beyond their grasp; that as a whole their capacity for making careful, accurate observations and drawing conclusions is rather limited.

Some of these shortcomings may, of course, be laid to faulty training in the grades, but I do not believe that the sec-

ondary school can make good its escape through that back-door; for granting that the training of future college students forms only a small part of the program of secondary education, and that it may not be possible to train the masses to any great extent in the art of knowing how to know, it must be admitted that high-school boys and girls are capable of logical, systematic and progressive study. To assume the contrary would seem to be an unwarranted reflection on their intelligence.

This deficiency of training in logical, systematic and progressive habits of study comes home to me very forcibly in our beginning course in zoology. It is annoying to an instructor to have to put up with faulty diction and inaccurate spelling; but it is a more serious proposition to teach science to students who, as a class, are incapable of dealing with a group of simple facts in a logical manner, because it results in a large part of our time and energy being taken up in teaching scientific method, especially at the beginning of the course.

It happens that none of the beginning science courses in this college requires for entrance previous training in its own or other science fields; so that our zoology course does not presuppose previous training in zoology. Consequently our beginning class is mixed as far as preparation is concerned: some of the students have had laboratory science other than zoology; some of them have had high-school zoology; while a few have never had laboratory science. In general those who have had previous laboratory experience take hold more readily in the laboratory work than those who have not; but it is also true that in theoretical discussions in lecture and quiz work it very often is a fact that students who have had little or no laboratory training appear to better advantage than those who have had the benefit of high-school laboratory science. All of them, however, show the same unmistakable symptoms indicative of previous confinement for a rather long time in a very popular model of educational straight-jacket.

This warped mental attitude on the part of students is displayed in all phases of the work. Thus we find that in preparing themselves for weekly quizzes students are inclined to memorize every word of a lecture or text-book assigned, if need be, rather than attempt an orderly analysis of the material for themselves. In the laboratory, students, as a rule, much prefer taking the word of the instructor (or that of their neighbor) about a difficult point, to getting down to work and making their own observations. Their reverent awe for authority may be very flattering to the instructor but is not conducive to good laboratory work in particular or to clear thinking in general.

As the course wears on the majority of the class come to realize as a result of hard experience that their pet cramming methods are availing them nothing; and they consequently make an honest effort to conform with more scientific procedure. Some few of course never do achieve any degree of proficiency; but then these would be hopeless under any circumstances and have no business being in college. Hereditary limitations may go a long way in explaining the sad plight of the latter group, but can scarcely be advanced as a reason for the general lack of ability to work and think, so characteristic of college freshmen. That the cause is to be sought in their preliminary training is indicated by the fact that experience has shown that it is entirely feasible to train freshmen in the course of a year to develop orderly methods of thinking and working. Why

is it that the secondary school does not give students a better start in attaining this goal?

A natural inference from the facts would be that the scientific method is being overlooked by the secondary school; but I am not inclined to believe that is the case. We hear so much nowadays about scientific method in all grades of teaching, so much about scientific lesson-plans and other prescriptions for making the brain grow, that one can not help thinking that where there is so much smoke there must be fire. But the fire appears to be very carefully guarded and, to the onlooker at least, seems to be burning itself out in heating the discussions of those who make and unmake school curricula. One is led to suspect, therefore, that there is too much loose talk about scientific method and not enough real and honest endeavor to apply it rigidly to education; with the result that students get too much information and not enough knowledge. You can not teach scientific method satisfactorily from theory alone any more than you can hope to be successful in teaching a person to swim if for any reason he never goes near the water. Method and material must go hand in hand and unless due recognition is given to the importance of observation at first hand on the part of the student, so-called scientific method is bound to fail.

To the casual observer an explanation of the unsatisfactory situation is suggested by the fact that this seems to be the age of fads; and that we have our cubists and futurists in education as well as in art. Anything and everything gets a chance. It is well within the limits of possibility therefore to suppose that the kind of art that is capable of producing a picture supposed to be that of a man coming downstairs but which in reality resembles nothing so much as a snap-shot of an explosion in a shingle factory, has much in common with the system of education that produces the "general science" course, by which I mean a year-course dealing with a kind of mosaic composed of fragments taken from the fields of chemistry, physics and biology. Not being a psychologist nor a specialist in diseases of the adolescent mind, I can make no claims to expert knowledge in the theory of secondary-school pedagogy; but if the adoption of the general science course is any indication of a trend in science teaching in the secondary school, I can easily understand why the use of the scientific method is failing to produce better results.

I have recently had the opportunity of looking over what I take to be a representative text-book on general science. The aim of the book is lofty indeed and its scope wide, for in the preface the author announces that while the book is not intended to prepare for college entrance examinations, it "should prepare the thoughtful reader to meet wisely and actively some of life's important problems, and should enable him to pass muster on principles and theories underlying scientific, and therefore economic, management, whether in the shop or in the home." Further on we are told that

> the youthful mind, and indeed the average adult mind as well, is singularly non-logical and incapable of continued concentration, and loses interest under consecutive thought and sustained style. For this reason the author has sacrificed at times detail to general effect, logical development to present-day interest and facts, and has made use of a popular, light style of writing as well as of the more formal and logical style common to books of science.

Passing on to the contents of the book, one is duly impressed with the author's deftness in circumventing the numerous obstacles besetting the path of the student in his quest for quick information. With

scant apology to recognized boundaries of the various science fields invaded, the book glides with cinematographic clearness and brevity over "heat," "thermometers" and "fresh-air" to "matter and energy"; later touching on the subject of "why we eat so much" and the related topic of "mistakes in buying"; managing in spite of manifold difficulties to omit nothing that every high-school boy and girl should know from the causes of "far-sightedness and near-sightedness," to information as to "when we work," the composition of "soda-mints" and "headache powders," the "difference between noise and music," the "phonograph," and finally the revelations of "electricity."

I am sure that the author of such a book, as well as other persons, must realize that this species of science is not science at all and that to call it so is merely adding one more name to the long and heterogeneous list of commodities in education and other fields offered to the public over the bargain counter of science at the present time. It is not worth while to quarrel with the name; but the question of allowing such a course a place in the high-school curriculum is another matter.

The establishment of the general science course is, I take it, an indication of a feeling of dissatisfaction with the results of science teaching in secondary schools; but certainly the situation is not going to be helped by crowding all of the sciences into a single course and offering it to the student as a sample of what he is to expect should he elect another course in science later on; by encouraging the student at the very outset of his high-school career to gain a superficial, smattering acquaintance with many subjects at the expense of a thorough knowledge of a few; by substituting encyclopedic for sane and sound educative methods. Kindergarten methods are all right in their place; but why should a high school offer a course which makes interest an end in itself? Such a course is sure to be attractive to students—and therefore popular—but this can scarcely be advanced as a justification for the course. The saddest part about popular courses is their popularity.

Every one knows that the scientific method is not limited in its application to the fields of natural science: it is simply a useful instrument for acquiring knowledge. At the same time the natural sciences offer such an excellent opportunity for the practise of a method, ability in the use of which independently of the subject-matter, is an accomplishment of the highest educative value whether the graduate goes to college or not, that it seems a great pity that in an already overcrowded curriculum time should be wasted on *pseudo-science*. A thorough grounding in the natural sciences both for the sake of the scientific method as well as the subject-matter is as essential for a well-rounded secondary education as training in ancient and modern languages, literature, history and mathematics, all of which are important.

The fundamental requirements of a science course are clearly stated in the preliminary report of the National Education Association Commission on the Reorganization of Secondary Education[2] in the following words:

> The committee maintains that unity of subject matter in any course in science is of first importance, by which is meant that the subject matter should be so organized that appreciation of underlying principles shall form the foundation of the student's knowledge, thus giving him a scientific basis for the organization of his knowledge.

This idea of unity of subject-matter distinguishes natural science of the secondary school from nature study of the grades. A

[2] Walter, H. E., SCHOOL AND SOCIETY, II., 48, 1915.

student of high-school age should be able to appreciate the orderly sequence of facts and ideas which constitute the various fields of science, as contrasted with the promiscuousness of nature study. The report goes on to say in regard to the aims of teaching biology (and the same applies in general to all of the natural sciences) that the course should endeavor "(1) to train the pupil in observation and reasoning; (2) to acquaint him with his environment and with common forms of plant and animal life, and especially with structure, functions and care of his own body, together with the general biological principles derived from this study; and (3) to show him his place in nature and his share of responsibility for the present and future of human society."

The report continues:

> We do not believe in rigidity of method in science instruction. Quizzes, conferences, experiments, individual reports, excursions, text-assignments are all good. They offer a rich and varied choice of pedagogical material, and each teacher should be given freedom to develop the methods best adapted to his own group of students and to the environment of the school in which he is teaching.
>
> In the laboratory time should not be wasted in detailed microscopical work, in complicated experimentation, in useless attention to drawing or other "busy work." All laboratory work should be based on definite information ungrudgingly and interestingly furnished, and should be accurately recorded. Neatness in notebook records is desirable but must not be exalted above thinking and understanding.
>
> With respect to how the work should be planned the committee unanimously agrees that two years of work in elementary science should be the basis for more advanced courses in science. Such work should deal with physical environment (including a study of matter and forces), plants, animals (including man), and the general applications of scientific principles to human welfare. If, however, administrative conditions make a two-year course out of the question, the committee recommends that a first-year course be required of all, and that a second year be offered as an elective.

A two-year preliminary course in science such as this is an entirely different proposition from the one-year course in general science. It respects both scientific and pedagogical principles, and promises to produce good results. In such a course the first half year would be devoted to "Physical Environment," the second half year to "Plants," the third half to "Animals" and the fourth half to "Man." I am inclined to believe that two years of work in elementary science together with a year in each of two natural sciences, such as chemistry, physics or other non-biological science, making four years in all, if required of all high-school students, would go a long way toward improving the mental equipment of the high-school graduate and incidentally meet some of the criticism that the college habitually directs at secondary-school training.

The idea of a definite sequence in the arrangement of science courses in the secondary-school curriculum is one that has developed slowly for the simple reason that the classification of science materials which is found in nature is difficult and involved, and not primarily arranged for pedagogical purposes. As a result of this and other reasons there has been a tendency on the part of administrative authorities to use science subjects as fillers for unoccupied gaps in the student's program. To-day there is no excuse for this, and since it is generally recognized that science has a very distinct educative value aside from its relation to applied sciences, every effort should be made to make science teaching effective.

At the same time there is danger in pushing the sequential plan too far. The arrangement of courses in definite sequence has long been practised in languages and mathematics in such a way that college

courses are offered in these subjects which are direct continuations of the secondary-school courses. Thus a student who has had two years of high-school German on coming to college is admitted to a second-year college course in intermediate German. In other words two years of high-school German are rated as the equivalent of one year of college German. I question very much whether it would be possible or advisable to standardize, for example, zoology courses in the high school in such a way as to make it practicable to admit students who have passed such high-school courses into an advanced course in college. A high-school course in this subject should deal as it usually does with the entire animal kingdom; but not so intensely nor from quite the same point of view as the college course. It is difficult to identify in zoology the rudiments that would be comparable to grammar, syntax and vocabulary of a language. The intrinsic differences in the subject-matter in the two cases makes it difficult to apply a sequential arrangement to the same degree in both cases. I am perfectly free to admit that a high-school course in zoology properly given should be a great help to a student in pursuing a college course later on, but I do not believe that such a course should admit him to anything more advanced than a course similar to the beginning course in zoology offered in this university. In this connection I speak of course only for zoology; possibly the conditions are not the same in the other sciences.

If I were asked to express my views in a general way on the organization and content of a high-school course in science, I think I should begin with the teacher. I need not tell this audience that a properly trained teacher can achieve success in spite of inadequate equipment, poor laboratory facilities and indifferent students; whereas a weak teacher is certain to drag chaos into every phase of his work whether other conditions be good or bad.

A thorough grounding in the subject-matter enabling the teacher to be a specialist in his field is an important requirement, but something more in the way of preparation is needed, it seems to me, to get the best results. It is one thing for an embryonic teacher to pass successfully college courses in science, but quite another for him after graduation to successfully teach science to a class of forty or fifty high-school boys and girls. In the University of Cincinnati there is every facility for enabling a student to specialize in science but practically none for training teachers how to teach science. The need for such courses has been recognized in other universities, with the result that in the cities in which two of these universities are located the science teaching in the secondary schools is said to be of a very high order and the best in the country. These courses are usually offered in the teachers' college of the institution, but are actually given by specialists in science. For example the course on "Teaching Zoology in the High School" in one of these institutions is given by a man who is primarily a trained zoologist. In the same way courses on teaching botany are given by a botanist, courses on teaching physics by a physicist, etc. I might also say that more general subjects like "Biological Evolution for Students in Education" are also given by science men. Courses along these lines conducted in the University of Cincinnati might possibly help solve a number of local problems.

If the standard of science teaching in secondary schools is ever going to be raised to its proper level, the necessity of having trained specialists to do the work must be recognized by school authorities. Science teachers should not be expected, or permitted even, to teach two or three other

subjects in unrelated fields. Everything possible should be done to aid science teachers to maintain a live interest in their subject and to keep abreast of progress in scientific advances. Science teachers should be encouraged in every way to undertake research in their particular fields—no matter how simple—and to carry on some line of investigation either in their own laboratories or in a college laboratory if one is available, as is the case in this city. Now I know that it is not possible to *compel* a person to do research. The ability to prosecute research in its deepest sense is a very rare quality, but that is no reason why teachers should not be encouraged to engage in some form of independent investigation not for the purpose of developing a group of research professors in our high schools but with the idea of improving the quality of high-school teaching in science.

As to the nature of the high-school course in zoology, I certainly would be the last person to lay down a set of rules to be blindly followed by the teacher. The method of science is simply a method of common sense whose guiding principle is the endeavor to provide the student with suitable material for making careful first-hand observation of facts and with the means for comparing and correlating the results of these observations with those of recognized authorities. Insistence on first-hand information must not however be pushed too far: to the extent of making the course a research course involving an unpardonable waste of time to the student in trying to discover what is expected of him and how he is to do it. The point that I would emphasize in laboratory work is the desirability of having live or freshly killed material for the student to study rather than charts, pictures, fixed material or stained slides. In selecting material for the course, therefore, the teacher should try to select animal forms that can be readily obtained in the living condition. The laboratory should contain as many live things as space will allow. These living exhibits should be carefully chosen for the purpose of illustrating general principles. Aquaria containing fish serve to show some points in the biology of an aquatic vertebrate; crayfish, which breed readily in the laboratory, form interesting life-history material; frogs' eggs obtained in the spring furnish material for the study of cleavage and metamorphosis; while hydra, flatworms, small crustacea, protozoa should be on hand all the year round. Such an arrangement not only provides a constant supply of fresh material but also stimulates interest in the students.

As to subject-matter I would emphasize the importance of adaptation; the relation of the individual to environment; some of the main facts of the problems which animals, including man, must meet in order to live; the idea of a struggle for existence and survival of the fittest. In this connection I can not recommend too strongly the very great value of visits to the Cincinnati Zoological Garden for the study of the relation of form, size, structure, color, etc., to function. Any teacher connected with a school located in or about Cincinnati who does not take his class to the Zoo at least once in the year is missing his best opportunity for teaching scientific zoology. Such trips of course must be carefully planned and intelligently outlined or the visits will degenerate into wild frolics. Other kinds of excursions should be conducted, and while these offer many difficulties, if the field trip consists in nothing else than requiring each student to collect a fruit jar of pond water and later examine it in the laboratory there is ample justification for making it.

In the high-school zoology course instruc-

tion in the cellular nature of the germ cells, the very general features of cell division, and the essentials of embryological development may be given. A year's course should also include a knowledge of the general plan of internal structure, say of one vertebrate (frog or fish) in general comparison with the human body, an arthropod (crayfish or insect), an annelid (earthworm), a cœlenterate (hydra), a protozoan (ciliate or ameba). In a half-year course I should include at least a vertebrate, an arthropod and protozoan. In general the details of such courses should be left largely in the hands of the teacher in order that he may have the full benefit of his own personal inclination and training in developing the most successful kind of a course.

In conclusion I merely wish to say that if there is any one who from reading the title of this paper obtained the impression that I had intended to champion the cause of scientific method as against the value of subject-matter, I trust that he has been disillusioned. As has been indicated once or twice before, in my opinion one cause at least of the unsatisfactory conditions in secondary science teaching has been the tendency to over-emphasize *method* to the detriment of *careful observations* on *carefully chosen material*. Any system of teaching which fails to recognize the essential unity of these two things will fail to accomplish the highest ends in science teaching.

H. L. Wieman
University of Cincinnati

EDUCATIONAL EVENTS

THE USE OF ENGLISH SCHOOLS BY THE WAR OFFICE

The Educational Supplement of the London *Times* states that although the war office has, as far as possible, avoided taking possession of school buildings, yet the number now being used for hospital and other purposes is very considerable. This occupation has caused an appreciable disorganization of the educational work in some areas. The local education authorities have, however, overcome the difficulty in various ways.

In the city of Nottingham, for instance, six schools were commandeered by the war department early last year for hospital purposes, and three others for the housing of troops. The Education Committee at once arranged for the hire of alternative accommodation as far as such was available, whilst others of the displaced scholars were arranged for by means of a "two-shift" organization at certain schools. The Public Parks Committee were also approached, and they consented to the erection of marquees or other temporary structures in the parks of the city, in order to relieve the pressure upon some of the schools where double sessions were being held, during the late spring, summer and early autumn months.

In Brighton also many school buildings, both elementary and secondary, were taken over by the war office early in the war, to provide hospital accommodation, and over 3,000 children were displaced in consequence. A small committee was appointed to make the necessary arrangements for the accommodation elsewhere of these displaced children, conferences were held with the head teachers concerned, and the whole of the transfer was smoothly and rapidly effected, the Board of Education agreeing to the setting aside of regulations and normal requirements in cases where the exigencies of the particular circumstances required it.

In Hertfordshire certain of the elementary schools at Watford have been requisitioned by the military authorities. After consultation with H.M. Inspector it was decided that double use should be made of other schools in the neighborhood, so that the children from two schools can be accommodated in one building, the children from one school having an extended morning session from 8:30 to 12, and those from the other school a long afternoon session from 1 to 4:30 P.M. The morning and afternoon sessions are being taken alternately by each of the two schools using the same building, for periods of a month at a time;

and it is proposed that the teachers shall utilize the afternoons or mornings on which they are not engaged in school duties in clerical work, or in meeting parties of their children for games, rambles or visits to places of educational interest, or in assisting teachers at other schools if necessary, or visiting other schools to observe methods of work.

In York, also, the military authorities have taken over a number of the elementary school buildings for the accommodation of troops, leaving over 6,000 children to be provided for elsewhere. In some cases it has been possible to secure alternative accommodation for the displaced children, but in many cases it has been necessary to arrange for the working of double sessions at certain schools.

THE SCHOOL OF BUSINESS OF COLUMBIA UNIVERSITY

PLANS for the first term of the School of Business, which is to be opened at Columbia University with the beginning of the winter session on September 27, have been announced by Dr. James C. Egbert, the director. In the official statement accompanying the catalogue of courses to be offered, the object of the new school is set forth. A sound theoretical basis will first be acquired by the student, and then, as far as possible in any school, he will get a practical training for business.

The courses are designed primarily for the college student who at the close of his sophomore year may desire to secure a more thorough and more exact knowledge of the principles, organization and methods of the commercial, industrial and financial world than is obtainable in other departments of the university. One of the objects, also, is to prepare students thoroughly for the state examination for the certificate of certified public accountant.

Furthermore, scholarships offered by the National City Bank, in its new training course are to be open to students in the school, recommended by the university and acceptable to the bank, which will enable graduates to equip themselves for work in the foreign departments of the bank. The following classes of students will be provided for:

Graduate students who are candidates for the higher degrees.

Students who have spent two years in Columbia College or Barnard College or in some other college of equivalent rank and are candidates for the degree of bachelor of science.

Graduates of high schools who have completed in the department of extension teaching work equivalent to that offered by Columbia College or Barnard College in the first two years.

Students over twenty-one years of age, actively engaged in business and qualified to undertake certain courses, who may be admitted as special students, but not as candidates for a degree.

Students who have had a full secondary education or its equivalent. These may enter the evening courses in business offered by the department of extension teaching, and become candidates for a certificate, obtainable in two years through the completion of courses representing forty-eight points of work.

All students taking the work of the first year in the new school who are enrolled in the course leading to the degree of bachelor of science will be required to take accounting, advanced economics or history of American commerce, business organization and administration, corporation finance or money and banking, and French, Spanish or German.

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY AND INDUSTRIAL STATIONS

THE Massachusetts Institute of Technology, in establishing its new school of practical chemical engineering, will maintain stations in connection with manufacturing industries. The institute has maintained a course in chemical engineering for many years and is now taking an important step in educational practise by bringing the school into direct contact with various industrial plants and thus connecting its course with industry not only in Boston but in various other centers throughout the United States. The new school will be opened in time for registration in September next.

The plan that the institute has outlined leading to a master's degree in chemical engi-

neering covers a period of five years of study. The first three and a half years from the high school are spent at the institute in Boston or in similar preparation elsewhere in obtaining a knowledge of the fundamentals of chemistry and engineering. The next nine months are spent in five or six industrial plants and the last nine months in the extensive laboratories of the institute in Cambridge which are about to be dedicated. The main feature of the new plan is the emphasis laid on the nine months spent in direct contact with industries. The plan involves no mere hasty visit to different plants or superficial survey of industrial processes. The institute maintains a professor in each of the five or six stations at the different plants and a well-equipped laboratory. The students are divided into as many groups as there are stations and pass around the circle of stations spending about six weeks in each until the whole cycle is completed. The stations are placed in certain plants not merely because of the importance of the industries that are there in operation but because those industries well illustrate certain fundamental processes that it is of the first importance that chemical engineers should thoroughly understand.

For the present five stations are to be established, and at each one a fireproof building to house a special library and a class or lecture room together with a laboratory fitted for the special work of the place. There will be a resident professor and the students will come in relays, taking the different stations in rotation.

One station is to be established at Somerville for the study of fuels and combustion, the laboratory to be in connection with the works of the N. E. Gas & Coke Co., and a second at Bangor with the Eastern Manufacturing Co. At Niagara Falls the station will be established in connection with the Exolon Manufacturing Co. Inorganic chemistry will be the general line of investigation at the works of the Atlas Cement Co. at Allentown, Pa., while the fifth has not yet been definitely fixed upon, but will be with one of the great chemical industries near New York or Chicago.

EDUCATIONAL NOTES AND NEWS

Cornell University has received two gifts from the alumni of the College of Civil Engineering to commemorate Professor Charles Lee Crandall's forty years of service to that college. One of the gifts is a portrait of Professor Crandall and the other is a fund of about $2,500 to found a prize for students of the college.

Dr. J. William White, trustee and formerly professor of the University of Pennsylvania, left the bulk of his estate to continue the work to which he gave the greater part of his life. The bequests amount to more than $400,000. The largest of these is a gift of $150,000 to endow the "J. William White professorship of surgical research," in the medical department of the University of Pennsylvania. Indirectly, the university shares in still larger gifts from the residuary estate, most of which is to go to the University of Pennsylvania for its hospital.

Dr. John H. Finley, the New York state commissioner of education, announced at Knox College, where he delivered the baccalaureate sermon, that Mrs. Russell Sage had, through him, given $75,000 to the college, which is Dr. Finley's alma mater and of which he was president from 1892 to 1899. Mrs. Sage's gift completes the $500,000 fund raised to expand and endow Knox College.

The General Education Board at its annual spring meeting voted $789,980 for the help of various educational institutions throughout the country. To the medical department of Washington University, St. Louis, $250,000 was appropriated. Other appropriations were: Coker College, Hartsville, S. C., $50,000; Colby College, Waterville, Me., $125,000; Rockford College, Rockford, Ill., $75,000; further prosecution of educational researches, $50,000; Spellman Seminary, Atlanta, Ga., $20,000; Hampton Institute, $25,000; Tuskegee Institute, $25,000; Morehouse College, Atlanta, $5,000; Fisk University, Nashville, $5,000; Mayesville Industrial School, Mayesville, S. C., $1,000; equipment of normal schools for negroes in North Carolina, $4,050; equipment of county training schools for negroes, $10,000; support of professors of secondary education,

$34,130; state agents for white rural schools, $40,800; state agents for negro schools, $34,500; educational research in New Hampshire, $5,500; farm demonstration work in Maine and New Hampshire, $8,500.

UNDER the retiring clause in the faculty regulations of Stanford University, Dr. David Starr Jordan has, as has already been noted here, been made chancellor emeritus; Dr. Oliver Peebles Jenkins has been made professor emeritus of physiology and histology, and Dr. Lillien Jane Martin, professor emeritus of psychology.

MAYOR MITCHEL has appointed Mr. George McAneny a trustee of the College of the City of New York to succeed Mr. William Henry Corbitt.

IN succession to the late John McLean Nash, Frederick A. Goetze, dean of the faculty of applied science of Columbia University and controller of the university, has been elected treasurer of the corporation. Mr. Goetze will assume the duties of his new office on July 1, and will resign as dean of the faculty of applied science, to take effect on the appointment of his successor.

DR. JOHN C. DUNCAN has been appointed professor of astronomy and director of Whitin Observatory of Wellesley College. Professor Sarah F. Whiting retires at the close of the present academic year as does also Professor Ellen Hayes.

THE University of Cincinnati announces that Dr. Charles Alphonso Smith, Edgar Allen Poe professor of English in the University of Virginia, will be the speaker at the commencement on June 10.

DR. W. W. BAKER, associate professor of Greek, and Deal Frederick Palmer, associate professor of physics, have been promoted to full professorships at Haverford College.

DR. FREDERICO DE ONIS, of the University of Oviedo, Spain, has been appointed professor of Spanish literature at Columbia University. Dr. Vera Dantaschakoff has been appointed instructor in anatomy in the College of Physicians and Surgeons, the medical school of the university.

DR. JESSE F. WILLIAMS, assistant professor of hygiene and physical education at Columbia University, has been appointed professor of hygiene and physical education in the University of Cincinnati.

DR. JAMES HARDY ROPES, Hollis professor of divinity, dean of special students and dean in charge of university extension, has been appointed the professor from Harvard University for the second half of the year 1916–17 under the interchange agreement between Harvard University and the western colleges. Warren Milton Persons, dean of the department of business administration and banking, and professor of economics and finance, at Colorado College, has been appointed visiting lecturer on economics from the college at Harvard University, for the first half of the academic year 1916–17.

UNDER the will of the late Mr. Edgar Allen, steel manufacturer, of Sheffield, the University of Sheffield has received a sum of $160,000. Twenty-five thousand of this is for the applied science department, and to this sum Sir Joseph Jonas has added $25,000. The total of $50,000 will be devoted to the provision of a material testing laboratory to be called the Allen and Jonas Laboratory. When the whole of Mr. Allen's estate is distributed the university, which is one of the residuary legatees, will receive a further substantial amount, and this will be devoted to scholarships. Of the amount now handed over to the university proper, half is to be reserved for scholarships for the sons of working men.

THE budget making appropriations for the various New York state institutions has been signed by the governor, and like most other institutions of the state, the college of agriculture of Cornell University has suffered somewhat in reduced appropriations. The chief reduction is in an item for miscellaneous labor out of which the college has for a number of years carried on most of its work on the farms, in the barns and in the laboratories. This cut amounted to approximately $58,000. This year all items including salaries, general expenses and maintenance are itemized, and each item must be adhered to in the adminis-

tration of the work. This gives the college less latitude of action than it formerly had. The total funds from all sources available for the use of the college for the next fiscal year are $688,173. Of this amount, $518,325 has been appropriated by the state. The other funds come from federal sources and tuition income. An item of $8,000 for the summer school has been provided. The amounts of funds available from all sources for the past five years were as follows: For 1911–12, $393,094; 1912–1913, $418,822; 1913–14, $616,889; 1914–15, $630,243; 1915–16, $692,846; 1916–17, $688,173.

An important discussion was held recently in the Senate House, Cambridge, on the report of the Previous Examination Syndicate. According to a report in the London *Times* the general trend of the discussion was that changes were not only desirable but inevitable, and not only in this examination, but in the general university curriculum. Professor Sir Joseph Larmor, M.P., who opened the discussion, thought it should be secured that boys at nineteen should possess a wide field of general knowledge. If they were to have an entrance examination of a simple character something must be done to avoid too great specialization at an early age. Professor Ridgeway held very strongly that every boy coming to the university should have had some training in natural sciences, and natural sciences should therefore be a compulsory subject in this examination. History was also essential, and also the geography of the British Empire. Boys were kept at school too long and ought to come to the university at eighteen at the latest. Dr. E. W. Barnes (master of the temple) said that the question of establishing a matriculation examination had been carefully considered. The syndicate felt that this could be discussed and voted on separately. They held the view that a year or two's experience of the new examination should be gained, and at the end of that time it might be made into a matriculation examination.

DISCUSSION AND CORRESPONDENCE

CAMPAIGN FOR AMERICANIZATION

Thoughtful people with large civic interests were suddenly aroused by the revelations of the census report of 1910 to a realization of the significance of the alien problem in this country. For many a decade, Americans with smug complacency had prided themselves on the irresistible power of American civilization to assimilate the foreigner who landed upon our shores. Nobody knew just how it was being done, nor could one point to any specific organization responsible for effecting the change, but somehow or other that subtle force of American civilization was ever busy at its task, and the alien was quietly but surely being transformed into an American.

With the publication of the immigration returns for 1905, which showed over one million immigrants entering this country that year, people began to wonder if after all the process of assimilation was really working as smoothly as it had been claimed. Million-immigrant years followed; the report of the Immigration Commission furnished a veritable mine of information; and the census report of 1910 finally portrayed the condition at that date. America suddenly learned that there were over 13,000,000 foreign-born persons in the country; that over 6,500,000 of these were males who might become citizens of the land; and that only 3,000,000 of them had become citizens. Had the melting pot ceased to boil? Had the solution become saturated? What had happened to the much-vaunted ability of this country automatically to assimilate the foreign element?

Other figures from this same census report were still more disquieting. There were nearly 3,000,000 persons in the country unable to speak and understand English, and of these over 2,500,000 were past twenty-one years of age. In other words, they were beyond the age when they were likely to learn a new language without some external stimulus. No state has any law affecting illiteracy or non-English speaking ability of the adult, nor with few exceptions, are there any compulsory laws on these points for minors who are above the compulsory school attendance age.

Two news letters recently issued by the United States Bureau of Education—"New York State and the Americanization Problem,"

and "Americanization in California"—mark the beginning of a campaign for Americanizing the alien which will be launched in dead earnest with the opening of the new school year in the fall.

The first of these letters was noted in SCHOOL AND SOCIETY in the issue of May 29. The second, given to the press this week, reproduces a letter sent out by State Superintendent Hyatt, of California, and addressed to the school superintendents of that state. It is significant that the Americanization problem is thus being attacked from a state point of view at these two extremes of the country.

With the peripatetic character of much of our alien population, the problem of educating the foreign born, of bringing him into contact with American standards and American civilization in its economic, civic and spiritual aspects, becomes of more than local significance. Unrestrained by local attachments, the alien workman moves hither and thither at the beck and call of economic need. Manifestly the responsibility of educating him and his family should not be thrown upon the individual community. New York and California have begun to realize this and to recognize that the alien problem is a state problem, and steps have been taken to meet it.

Illiteracy and inability to speak English, although not the only problems of our foreign-born population, are surely two of the most fundamental, for such disabilities are most repugnant to American life and must be overcome before any appreciable progress in assimilation can be made.

Census returns for 1910, which brought the facts of illiteracy and inability to speak English forcibly to the attention of thoughtful people, showed clearly that these are both problems of the adult. Of substantially 3,000,000 foreign-born persons in the United States who could not speak English, more than 2,500,000 were over twenty-one years of age, and only 35,000 or 1.3 per cent. were attending school.

At present, the evening school provides the most definite way of reaching this alien group. California has the distinction of being the only one of our states whose constitution specifically recognizes the evening school as part of the state school system. Superintendent Hyatt, therefore, in his emphasis upon the importance of evening schools, has an advantage not enjoyed by the chief education officers of the other states. His message is particularly timely in that he urges additions to the school budgets for the coming year, at the very moment when such budgets are in the making.

California enjoys other advantages with respect to evening schools: first, the evening school term is coextensive with that in the day schools; and second, the state makes regular grants for evening schools, a two-hour session at night being reckoned as half a school day.

The full school year and the evening session reckoned as a half-day offer California an opportunity to establish her evening-school staff upon a sound and permanent basis not hitherto attempted. Evening-school teachers could be placed on a par with the day-school force, and as high a standard of teaching ability and as much vigor of effort could thereby be secured as are now found in the day schools.

In order to effect this, one only needs to reorganize teaching assignments on a shift-basis, thereby following the regular practise in an industrial plant where the hours of labor exceed the hours of the working day. Recognition of an evening session as half a school day for apportionment of state grants facilitates such a reorganization. From this it would not be such a radical step to recognize morning and evening teaching, or afternoon and evening teaching as likewise constituting a full day's work.

Thus would the schools be assured of a permanent and competent teaching staff, and the arrangement would avoid the nervous and physical strain entailed at present by recruiting the evening-school staff from the day-school force. No more changing of classes and teachers would be required than is already in practise wherever the departmental system is followed. Furthermore, since the evening-school term parallels that of the day school, no increase in budget would be necessary. The school day would consist of three parts, any

two of which would constitute a teaching day.

What would be the reaction on the part of the teachers to this plan? At first, doubtless, objection would be raised in many quarters. With the hundreds of teachers in larger cities, however, it is entirely likely that the evening-school staff could be easily recruited on such a basis. In the first place, two hours in the evening would constitute half a teaching day, and in the second place, the opportunity of having an entire morning or an entire afternoon free throughout the year would both be advantages which would appeal to many teachers after the initial conservative objection had passed away.

Obviously such a scheme could be adopted in communities which have a short evening-school term only at increased expense. The short evening-school term, however, is likely to pass in the not far distant future, for it is not in line with the wider use of the school plant, a question now actively before the public mind, and a plan already in operation in some communities.

FREDERIC ERNEST FARRINGTON
BUREAU OF EDUCATION,
WASHINGTON, D. C.

QUOTATIONS

CONDITIONS AT BRYN MAWR COLLEGE

BRYN MAWR in the four years from 1912 to 1916 has added to its heritage from the eighties certain new and very much needed things and has tried to get back again certain very desirable things that it seemed to have lost partially during the last quarter of a century. During the past four years then Bryn Mawr has been busily setting its house in order and like all thorough housecleaning the process has been somewhat unpleasant for those of us who live in the house. Indeed some of our linen that we ourselves did not know was dirty has been washed on the housetops and for us a wilderness of skeletons that we did not know were housed in our many college closets have been persuaded to stalk abroad horribly clanking their chains. But after all the only thing that really matters for the college is to have our sheets clean and smelling of lavender and our closets full of sun and air. And that is, I believe, what has been accomplished during these four years.

During these four years we have found that our lecture system was no longer working right—we have scrapped it. We have broken up our big classes into sections. We have introduced more discussions, more drop quizzes, more written work. We are still at work on this problem. I hope that we shall next try the "case system" of instruction. Something is wrong with all teaching.

During these four years we have discovered that our students were no longer so industriously as formerly attending our classes but *were* attending various other (from our point of view) not equally desirable functions, such as house-parties, home reunions, weddings, etc. In justice to our students it should be said that generally, however, they were staying away from classes from a mistaken idea that they could study better *without* than *with* our assistance. This discovery brought about the "cut rule" of last year about which so many unsympathetic things were said in the newspapers, which also met with the disapproval of the students and many alumnæ. I believe that no one of the faculty—and certainly not the president of the college—thought that this cut rule was a permanent solution. It was a means—the only effective means we knew—of calling attention to an impossible situation. For one year students and faculty knew what it was like to have all the students attend lectures. During the current year by request of the students themselves the responsibility of attendance has been placed on them with all the assistance the faculty can give them and the result has been truly splendid. Two years ago our attendance at classes—or rather the lack of it—was the worst of any college. This year I am confident that it is the best. We owe a great debt of gratitude to our student body for this wonderful result and especially to our graduating class and more especially to one of its members who as president of the undergraduate association formulated and carried out the cooperative action which has secured such success. I believe attendance at classes at Bryn Mawr, this most difficult of all

academic problems, is solved for all time—and solved by voluntary student action. Also our teaching is already feeling the good results of regular attendance at classes and will feel it more each year. Inspiring teaching meets with infinitely greater recognition, and indifferent teaching with infinitely more severe condemnation, when all the students are present than when many of the students are absent. Under the universal cutting system a high standard of teaching can not be maintained. Our critics of a year ago—whether alumnæ, students, or newspaper reporters—might perhaps have given the faculty of Bryn Mawr College the benefit of the doubt.

We are to-day immensely stronger in our teaching and in our morals as a college than we were two years ago when we passed the cut rule. Laxness in one important matter like attendance at classes comes to mean in time lack of conscientiousness in all other college matters. This year our two great students' organizations, the Self-Government and the Christian Association, have felt the quickening of reform in the student body. The students see the need of greater devotion to their earlier ideals, and are attacking these problems also. I believe that this healthy spiritual and intellectual reform could have been fostered in no other way so well as by the faculty cut rule of 1914–15. If I am right it was worth all it cost.

During the past five months, from January to June, Bryn Mawr has been working out a new plan for the government of the college. This plan is now in operation. It is the result of repeated conferences between the full professors, associate professors, associates, some members of the staff, the deans of the colleges, the president, and the directors. It represents the furthest limit to which we can go harmoniously and will, we believe, with such improvements as experience may suggest, make Bryn Mawr a leader in the new and triumphant movement of social democracy toward ever closer cooperation between the people who control great institutions and the people who devote their lives to their service. We are confident that this cooperation will not lower but will raise the high standards of teaching and research which Bryn Mawr so proudly upholds in women's education. Other great experiments have succeeded at Bryn Mawr against prophesy and general expectation. Why not this greatest of all modern experiments in American college education?

In our earnest endeavor to do the right thing we have not been precisely assisted by all the Philadelphia papers which have never before failed to hold out a helping hand to Bryn Mawr College but I am thankful to say we have not been vitally hindered. Our Alumnæ Association in all its different organized branches, its board of directors, its academic committee, and its various clubs and our resident student body have stood loyally by in silence and allowed us to work out our own salvation. I am sure that our new plan of government can count on their fullest support.

And if—as I am told is the case—the offering up of the president of the college as a public sacrifice to public attack has served to quicken the sense of responsibility to their alma mater of Bryn Mawr's graduates throughout the United States and to stir them deeply enough to make them care for her welfare as her spiritual children should all that has happened has happened well.

In this connection it should be recalled that in the past year our alumnæ have been drawn much closer to the administration of the college by the new functions assumed by their academic committee which makes their connection with their college closer than that of any other alumnæ I know of.

During the past four years Bryn Mawr has made what I believe is a great advance in the social service of the community by opening her two graduate professional departments of education and social research. These two fields of work—teaching and social service—are far more frequently than any other work engaged in by our graduates both by those who earn a living and by those who do not. Study, research and advanced training along these lines superimposed on an honest college education along these lines will be in the future Bryn Mawr's great contribution towards the professional education of woman. I believe that

History in the junior high school: R. M. Tryon.
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The Catholic Educational Review—May

Mental development: Thomas Edward Shields.
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THE GOVERNMENT OF BRYN MAWR COLLEGE

THE committee of the directors of Bryn Mawr College, to which was referred the request of the full professors of the college addressed to President Thomas under date of March 29, 1916, reported to the directors that they had held conferences with all the full professors, and a committee thereof; with all the associate professors and associates; with members of the Alumnæ Academic Committee; with Dean Reilly, Dean Maddison, and with several other members of the teaching staff as well as with the president of the college.

The committee recommended adopting measures granting in principle the following rights to the faculty:

1. Representation at meetings of the board of directors.

2. A committee elected by the faculty to make recommendations to the directors as to reappointments and terminations of appointments.

3. Provisions safeguarding the tenure of office of full professors after a certain number of years of service.

The committee submitted a plan embodying the above principles and recommended that it be adopted to go into effect at once with the expectation that experience may demonstrate the necessity of modifications in details from time to time.

The plan, which was adopted by the board of directors at a meeting held on May 19, is as follows:

The board of directors of Bryn Mawr College, recognizing the primary responsibility of the faculty in academic matters and in the maintenance of high professional standards among its members, and wishing to emphasize this responsibility, as well as to promote closer cooperation between the directors, president and faculty, has adopted the following plans for the governing of the college:

THE PRESIDENT

The president shall be the executive of the college and shall represent it on public occasions.

The president shall be the presiding officer of the faculty, council and senate and in all conferences of the committee on appointments or conference between that committee and committees of the board of directors or the academic committee of the Alumnæ Association. In the absence or inability of the president of the college to act as such presiding officer, the dean of the college shall act in her stead. Or, in the case of her inability to act, the resident dean. Or, in the case of her inability to act, the senior professor of the faculty.

The president shall bring business from the faculty and from the college before the directors, except in so far as this may be presented in written communications from the secretary of the faculty.

THE FACULTY

A. Constitution.—The faculty shall consist of the president, the deans and all officers of instruction holding positions above that of instructor.

B. Functions.—The faculty shall have power over all matters pertaining to admission requirements, to undergraduate curriculum, instruction, including attendance, examinations and recommendations of candidates for the degree of A.B.

The faculty shall forward to the board of directors nominations for fellowships and scholarships, in accordance with the regulations.

The faculty shall be consulted before an academic department is established or discontinued.

The faculty shall have the power to elect committees on library and laboratories, and these shall have power to confer with and to make recommendations to proper committees of the board of directors.

The faculty shall have power to elect its secretary and to elect and constitute whatever committees may be desirable for the conduct of its business, and to determine all matters pertaining to its meetings.

The faculty shall report in writing all impor-

she can do as much there as she has already done in her undergraduate and graduate schools.

The opening of these two departments of graduate work during the past four years seems to me of happiest moment. They will be Bryn Mawr's constructive contribution toward the professional training of women for their two greatest professions. Bryn Mawr's action has already met with the most cordial approval of teachers and social workers and has drawn the college very close to the community which it exists to serve. Both these departments were endowed by legacies of women, great in their service to their day and generation—Phœbe Anna Thorne and Carola Woerishoffer, one old in years and one very young. Both are continuing their work through Bryn Mawr College. Women must endow women's colleges if they are to endure. I can think of no better substance for a codicil to the wills of the women in this audience than a gift to broaden and enlarge the work of these two departments.

I hope that you may feel, as I do, that Bryn Mawr's growth during this last college generation covered by the years of study of our present graduating class has been truly satisfactory and argues well for the future of the New Bryn Mawr. But this future lies not only in the hands of the directors and faculty but in your hands, friends and alumnæ of the college, and in your hands, to-day's bachelors, masters and doctors. Let us all work together so that Bryn Mawr's daughters may rise up and call her blessed.—*Commencement address by President M. Carey Thomas.*

BOOKS AND LITERATURE

EDUCATIONAL JOURNALS

The Educational Review—June

Japanese education of to-day: K. Sakamoto.

Back to Pestalozzi: Lawrence A. Averill.

The ideals of some western children: W. G. Bateman.

The junior high school and the college: Guy E. Snavely.

A suggestion for a cultural course: Henry Wickes Goodrich.

Where the college fails: Walter S. Hinchman.

School Science and Mathematics—June

Methods of increasing the efficiency of pupil and teacher in secondary-school chemistry: Wilhelm Segerblom.

An elementary optical bench: H. W. Farwell.

The fundamental concepts of electrical energy and the beginning student: O. L. Brauer.

A method of presenting laboratory exercises in physics: John R. P. French.

A new form of frequency meter: N. F. Smith.

Revised report of the biology committee of the National Education Association Commission on the reorganization of secondary education: James E. Peabody, chairman.

How can I teach general science?: John C. Hessler.

Practical work in arithmetic: Myrtie Collier.

Mathematics relays for high schools: Ernest H. Koch, Jr., and Thomas H. McCormick.

The English Journal—June

Literature as educational means: Alexis F. Lange.

The outside of the cup: Louis W. Rapeer.

New wine and old bottles: John B. Opdycke.

The elimination of the commencement oration: Maurice W. Moe.

Teaching freshmen to spell: John A. Lester.

The Journal of Home Economics—June

The teacher and community well-being: Geo. H. von Tungeln.

Costume appreciation: Mary Henleigh Brown and Lucy D. Taylor.

Pasteurization as a public health measure: C. E. Hilliard.

For the homemaker.

Food selection for rational and economical living: C. F. Langworthy.

Educational Administration and Supervision—May

Scientific methods in educational administration: David Snedden.

New York and the Gary system: Randolph S. Bourne.

A descriptive and critical study of Buckingham's investigation of spelling efficiency: W. F. Tidyman.

A statistical study of school reports from the twenty-five largest cities of Indiana: J. T. Giles.

The Elementary School Journal—May

Classroom methods and devices—a type study in English composition: Eleanor M. Lally.

Course of study in drawing in the elementary school, school of education, the University of Chicago. II.: Walter Sargent, Elizabeth E. Miller and Margaret Gordon.

History in the junior high school: R. M. Tryon.
The "six-three-three plan" at Mt. Vernon, Indiana: E. J. Llewelyn.

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The faculty shall have power to elect its secretary and to elect and constitute whatever committees may be desirable for the conduct of its business, and to determine all matters pertaining to its meetings.

The faculty shall report in writing all impor-

tant actions to the secretary of the board of directors.

The faculty shall elect from among the full professors and associate professors after their first term of appointment a committee of three, who shall hold office for three years, except that two members chosen at its first election shall hold office for two years and one year respectively. Members of this committee shall not be reelected at the end of any three-year term until after one year shall have elapsed.

This committee shall have the right to attend and take part in the discussion at all meetings of the board of directors, unless by special request of the board, but shall have no vote.

The faculty shall elect a standing committee on appointments, consisting of five members, at least three of whom shall be full professors; two may be associate professors after their second term of appointment; the members of the committee shall hold office for five years, except that the first election shall be respectively for one, two, three, four and five years. Members of this committee shall not be reelected at the end of any term until after one year shall have elapsed.

It shall be the duty of this committee to become familiar with the teaching of the faculty and staff, to advise with the president and, in general, to keep in touch with academic work of the college.

The president shall consult this committee before making any recommendations to the board of directors on reappointments or refusal of reappointment of officers of instruction. In all such cases the recommendations of this committee and the vote taken shall be reported in writing to the board of directors. Before taking action the committee shall consult with the departments concerned and with the deans of the college.

If the case of a member of the committee is under consideration, the other members of the committee may appoint a substitute of like rank to consider that particular case.

Wherever practicable this committee is to be consulted as to initial appointments.

THE ACADEMIC COUNCIL

(*a*) *Constitution.*—The council shall consist of the president, deans, all full professors and associate professors after their first terms, and associate professors who are heads of departments, who have been connected with the college for three years.

(*b*) *Functions.*—The council shall have power over all matters pertaining to higher degrees and shall have charge of the learned publications of the college.

It shall have power to elect and constitute whatever committee may be desirable for the conduct of its business and to determine all matters pertaining to its meetings.

The council shall report in writing all important actions to the secretary of the board of directors.

THE SENATE

(*a*) *Constitution.*—The senate shall consist of the president, deans and all full professors who have been connected with the college for three years.

(*b*) *Functions.*—The senate shall have sole power to impose the more serious penalties, including the suspension and expulsion of students for all academic offenses.

The senate may make recommendations concerning student activities which affect academic work.

It shall have power to appoint whatever committees may be desirable for the conduct of its business and to determine all matters pertaining to its meetings.

The senate shall report in writing all important actions to the secretary of the board of directors.

OFFICERS OF INSTRUCTION

The grades in the teaching staff shall be as follows: 1, professors; 2, associate professors; 3 associates; 4 lecturers; 5, instructors.

Appointments may also be made of demonstrators, assistant demonstrators, assistants and readers.

Professors shall be appointed for indefinite terms, except in the case of the appointments of professors not previously connected with the college, in which case the initial appointment shall be for three years, and if renewed shall be for an indefinite term.

Associate professors shall be appointed for terms of three years until after the third appointment, when the appointment shall be for an indefinite term.

Associates shall be appointed for terms of two years or more.

Other officers of instruction shall be appointed for terms of one year or more.

The foregoing appointments shall respectively cease at the expiration of the several terms agreed upon, but notice of reappointment or nonreappointment shall be given in writing by the president of the college in case of associate professors in

the first term of appointment, associates and those of lower rank on or before the first day of March of the year in which the appointment terminates, and in case of a professor or associate professor after the first term of appointment on or before March 1 of the year preceding that in which the appointment terminates; in the event of a decision by the directors not to continue the appointment of or to remove a professor or associate professor leave of absence at the option of the board may be given to such professor or associate professor by the directors, with full salary for one year. All appointments are subject to regulations covering the retiring age.

Professors and associate professors appointed for indefinite terms shall be removed only after a conference between the committee on appointments and a committee of five directors, at which conference the president of the college shall preside, and only after a written report of the findings of said conference shall be made to the board of directors for consideration and action by it. All teachers of the above groups shall be entitled to have the charges against them stated in writing and to have a fair hearing on the charges before this conference before its findings are reached.

These regulations supersede all previous regulations of the board of directors which in any way may conflict with the provisions herein contained. All actions taken by the faculty, council or senate are subject to review and determination by the board of directors.

The foregoing plan may be altered or amended by the joint consent of the board of directors and the faculty, or by the board of directors alone after due notice to the faculty and after giving the faculty an opportunity for conference between committees of the board and the faculty to consider the proposed amendments or changes.

EDUCATIONAL RESEARCH AND STATISTICS

THE OCCUPATIONS OF THE PARENTS OF COLLEGE STUDENTS

IT is interesting to note just what classes of people are able nowadays to send their children to college. In order to secure some definite information on this question, I have recently made a study of the various occupations pursued by the fathers of the students of The Pennsylvania State College.

The group of students considered numbered 2,157 and included all students registered in the college year 1913–14 in the four-year courses, the two-year course in agriculture, and special students. From this number 339 had to be subtracted, because the father was either deceased, or retired, or apparently without occupation. The total number of students, therefore, whose fathers' occupations have been taken into account was 1,818. This number will be considered under eight groups, as follows:

I. MERCANTILE GROUP

The parents engaged in mercantile pursuits number 391, representing 21.5 per cent. of the total number. They may be classified as follows:

Storekeepers and merchants	220
Salesmen and commercial travelers	65
Lumber dealers	27
Druggists	13
Jewelers	13
Agents and solicitors	11
Hotel keepers	11
"Butchers," or meat dealers	10
Buyers	7
Liquor dealers	6
Bottlers	5
Newsdealers	2
Junk dealer	1

II. INDUSTRIAL AND MANUFACTURING GROUP

The number of parents engaged in industrial and manufacturing enterprises (not including artisans and operatives) is 328, or 18 per cent. of the total. This group includes the following subdivisions:

Superintendents, managers and foremen	108
Railroad employees	83
Manufacturers	74
Contractors	52
Coal operators	5
Oil operators	3
Meat packers	2
Brewer	1

III. ARTISAN GROUP

The third group includes artisans, craftsmen and workmen, and contains 323, or 18 per cent. The following interesting subdivisions occur:

Carpenters	40
Machinists	28
"Engineers"	22
Laborers	20
Blacksmiths	14
Miners	12
Mechanics	11
Moulders	11

Plumbers	10
Mill-workers	10
Steelworkers	9
Draymen	8
Printers	8
Bakers	7
Tailors	6
Cigarmakers	6
Painters	6
Ironworkers	6
Barbers	5
Car-makers	5
Electricians	5
Tinsmiths	5
Plasterers	4
Slaters	4
Miscellaneous	61

IV. AGRICULTURAL GROUP

The total number engaged in agricultural occupations is 311, or 17.1 per cent. This group includes the following:

Farmers	279
Millers	13
Gardeners	9
Dairymen	8
Drover	1
Veterinarian	1

V. PROFESSIONAL GROUP

The number of parents who may be called "professional men" is 209, or 11.5 per cent. The following subdivisions have been noted:

Physicians	56
Lawyers	39
Ministers	36
Teachers	31
Dentists	11
Civil engineers	9
Mechanical engineers	9
Architects	4
Musicians	4
Electrical engineers	3
Landscape gardeners	2
Geologist	1
Forester	1
Chemical engineer	1
Mining engineer	1
Sanitary engineer	1

VI. CLERICAL GROUP

The number of parents engaged in clerical occupations is 96, or 5.3 per cent. The following represents the various subdivisions:

Clerks	33
Bank employees	30
Bookkeepers and accountants	25
Secretaries	4
Paymasters	2
Indexer	1
Timekeeper	1

VII. OFFICIAL GROUP

The number of parents who hold federal, state, county or township offices is 55, or 3 per cent. These have been classified as follows:

Postmasters and postal clerks	13
Mail carriers	13
Railway mail clerks	8
Justices of the peace	5
United States civil service	4
Attendant at asylum	1
County commissioner	1
Detention officer	1
Naval officer	1
Army officer	1
Fish commissioner	1
Judge	1
Sheriff	1
Superintendent of almshouse	1
Member of congress	1
Tax collector	1
Warden of penitentiary	1

VIII. MISCELLANEOUS GROUP

In this group have been included those occupations which could not conveniently be classified with any of the preceding groups. This group comprises 105, or 5.6 per cent. In this "omnibus class" occur the following subdivisions:

Insurance agents	28
Real estate agents	22
Brokers	9
Editors	8
Liverymen	5
Telegraph operators	5
Undertakers	4
Watchmen	4
Y. M. C. A. secretaries	4
Draftsmen	3
Publishers	3
Bill collectors	3
Designers	3
Advertiser	1
Butler	1
Inspector of explosives	1
"Toll-master"	1

SUMMARY

	Group	Number	Percentage
I.	Mercantile	391	21.5
II.	Industrial and manufacturing	328	18.0
III.	Artisan	323	18.0
IV.	Agricultural	311	17.1
V.	Professional	209	11.5
VI.	Clerical	96	5.3
VII.	Official	55	3.0
VIII.	Miscellaneous	105	5.6

A. H. ESPENSHADE
THE PENNSYLVANIA STATE COLLEGE